Maths

Alexander

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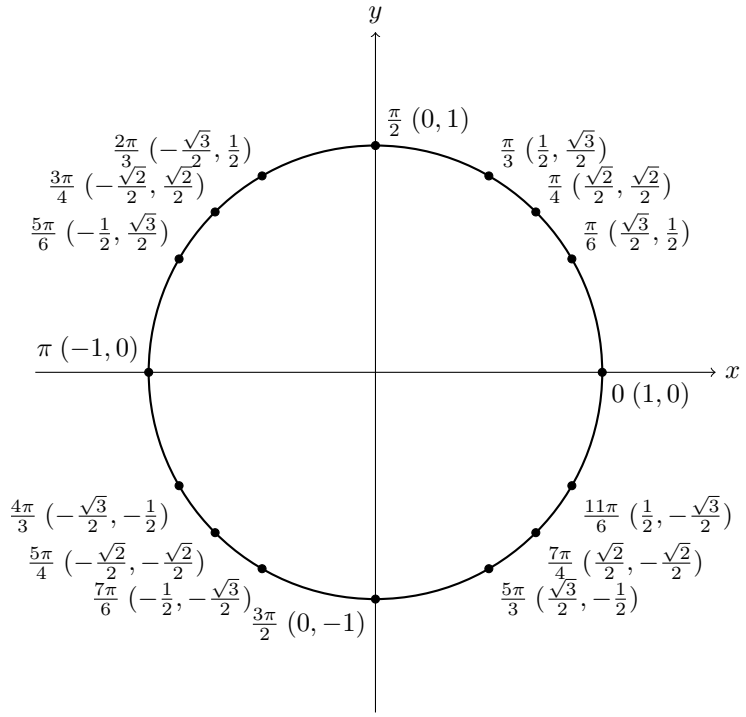
Precalculus

0.1 Trigonometry



1. Pythagorean:
   - $\sin^2(x) + \cos^2(x) = 1$
   - $\tan^2(x) + 1 = sec^2(x)$
   - $1 + \cot^2(x) = csc^2(x)$
2. Reciprocal:
   - $\csc(x) = \frac{1}{\sin(x)}$
   - $\sec(x) = \frac{1}{\cos(x)}$
   - $\cot(x) = \frac{1}{\tan(x)}$
3. Even-Odd:
   - $\sin(-x) = -\sin(x)$

- $\cos(-x) = \cos(x)$
- $\tan(-x) = -\tan(x)$

4. Co-function:
    - $\sin(\frac{\pi}{2} - x) = \cos(x)$
    - $\cos(\frac{\pi}{2} - x) = \sin(x)$
    - $\tan(\frac{\pi}{2} - x) = \cot(x)$
5. Double-Angle:
    - $\sin(2x) = 2\sin(x)\cos(x)$
    - $\cos(2x) = \cos^2(x) - \sin^2(x)$
    - $\tan(2x) = \frac{2\tan(x)}{1-\tan^2(x)}$
6. Sum and Difference:
    - $\sin(x \pm y) = \sin(x)\cos(y) \pm \cos(x)\sin(y)$
    - $\cos(x \pm y) = \cos(x)\cos(y) \pm \sin(x)\sin(y)$
    - $\tan(x \pm y) = \frac{\tan(x) \pm \tan(y)}{1 \pm \tan(x)\tan(y)}$

Calculus

1.